



A fracture mechanics approach for the analysis of plane failure in rock slopes

C.H. Chen, C.L. Wang

National Cheng Kung University, Taiwan (n4891111@ccmail.ncku.edu.tw / Fax: +886-6-2380421)

A method is proposed for analyzing the plane failure in rock slopes by fracture mechanics approach. Since the tension crack tip in the upper slope is often a critical location for starting a plane failure, this phenomenon may be treated as a crack problem using the concept of fracture mechanics. The main purpose of this study is to present an alternative for rock slope instability. Numerous parametric studies of rock slope problems are analyzed and the fracture parameters, stress intensity factors (SIF), are calculated by Finite Element Method (FEM). A procedure for evaluating the safety factor based on fracture mechanics approach for plane failure has been developed and compared with the conventional limit equilibrium analysis. The results of this study show that fracture mechanics provides a useful tool to tackle the rock slope problem with a tension crack.